

- 1        1. A computer readable storage medium comprising computer readable program  
2        code containing a programming interface for managing and conducting fast replication  
3        operations, the programming interface comprising:  
4                an add to snapshot set function configured to add snapshot criteria to a snapshot  
5        set; and  
6                an execute snapshot set function configured to initiate a plurality of fast  
7        replications operations as specified by the snapshot set.  
8  
9        2. The computer readable storage medium of claim 1, wherein the snapshot criteria  
10      comprises at least one data field selected from the group consisting of a source volume  
11      indicator, a target volume indicator, an auto-select target indicator, a partial volume  
12      indicator, a source extents indicator, a redundancy level indicator, and background copy  
13      indicator.  
14  
15      3. The computer readable storage medium of claim 1, wherein the programming  
16      interface further comprises:  
17                a create snapshot set function configured to create a snapshot set; and  
18                a delete snapshot set function configured to delete a specified snapshot set.  
19  
20      4. The computer readable storage medium of claim 1, wherein the programming  
21      interface further comprises:  
22                a remove from snapshot set function configured to delete specified snapshot  
23      criteria from the snapshot set; and  
24                a terminate snapshot set function configured to terminate the plurality of fast  
25      replications operations specified by the snapshot set.  
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- 1       5. The computer readable storage medium of claim 1, wherein the programming
- 2           interface further comprises a get snapshot set function configured to provide information
- 3           regarding a specified snapshot set.
- 4
- 5       6. An apparatus for managing and conducting fast replication operations, the apparatus
- 6           comprising:
  - 7             a snapshot management module configured to add snapshot criteria to a snapshot
  - 8             set; and
  - 9             a snapshot execution module configured to initiate a plurality of fast replications
  - 10           operations as specified by the snapshot set.
- 11
- 12      7. The apparatus of claim 6, wherein the snapshot management module is further
- 13           configured to manage snapshot criteria comprising at least one data field selected from
- 14           the group consisting of a source volume indicator, a target volume indicator, an auto-
- 15           select target indicator, a partial volume indicator, a source extents indicator, a redundancy
- 16           level indicator, and a background copy indicator.
- 17
- 18      8. The apparatus of claim 6, wherein the snapshot execution module is further
- 19           configured to terminate the plurality of fast replications operations specified by the
- 20           snapshot set.
- 21
- 22      9. The apparatus of claim 6, wherein the snapshot management module is further
- 23           configured to manage a list of controllers associated with the snapshot set.
- 24
- 25      10. The apparatus of claim 6, wherein the snapshot management module is further
- 26           configured to create a snapshot set and delete a specified snapshot set.
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- 1        11. The apparatus of claim 6, wherein the snapshot management module is further  
2        configured to delete specified snapshot criteria from the snapshot set and the snapshot  
3        execution module is further configured to terminate the plurality of fast replications  
4        operations specified by the snapshot set.
- 5        12. The apparatus of claim 6, wherein the snapshot management module is further  
6        configured to provide information regarding a specified snapshot set.
- 7
- 8        13. An apparatus for managing and conducting fast replication operations, the apparatus  
9        comprising:
  - 10            means for adding snapshot criteria to a snapshot set; and
  - 11            means for initiating a plurality of fast replications operations as specified by the  
12            snapshot set.
- 13
- 14        14. The apparatus of claim 13, further comprising:
  - 15            means for managing a list of controllers associated with the snapshot set;
  - 16            means for creating the snapshot set;
  - 17            means for deleting a specified snapshot set;
  - 18            means for removing specified snapshot criteria from the snapshot set;
  - 19            means for terminating the plurality of fast replications operations specified by the  
20            snapshot set; and
  - 21            means for providing information regarding a specified snapshot set.
- 22
- 23        15. The apparatus of claim 13, further comprising means for managing snapshot criteria  
24        comprising data fields selected from the group consisting of a source volume indicator, a  
25        target volume indicator, an auto-select target indicator, a partial volume indicator, a  
26        source extents indicator, a redundancy level indicator, and a background copy indicator.
- 27

- 1       16. A method for managing and conducting fast replication operations, the method
- 2       comprising:
  - 3           adding snapshot criteria to a snapshot set; and
  - 4           initiating a plurality of fast replication operations as specified by the snapshot set.
- 5
- 6       17. The method of claim 16, wherein the snapshot criteria comprises at least one data
- 7       field selected from the group consisting of a source volume indicator, a target volume
- 8       indicator, an auto-select target indicator, a partial volume indicator, a source extents
- 9       indicator, a redundancy level indicator, and a background copy indicator.
- 10
- 11      18. The method of claim 16, further comprising conducting an operation selected
- 12      from the group consisting of:
  - 13           creating the snapshot set;
  - 14           deleting a specified snapshot set;
  - 15           providing information regarding a specified snapshot set;
  - 16           deleting specified snapshot criteria from the snapshot set; and
  - 17           terminating the plurality of fast replication operations specified by the snapshot
  - 18       set.
- 19
- 20      19. The method of claim 18, wherein adding snapshot criteria to a snapshot set is
- 21      conducted using an API.
- 22
- 23      20. The method of claim 16, wherein adding snapshot criteria to a snapshot set and
- 24      initiating a plurality of fast replication operations as specified by the snapshot set
- 25      are conducted across multiple volumes and multiple controllers.
- 26
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- 1        21. The method of claim 16, wherein initiating a plurality of fast replication
- 2        operations may be conducted by any one of a plurality of servers in a storage system.
- 3
- 4        22. The method of claim 16, further comprising managing a list of controllers
- 5        associated with the snapshot set.
- 6
- 7        23. A system for managing and conducting fast replication operations, the system
- 8        comprising:
  - 9            a plurality of storage volumes configured to store data;
  - 10          at least one storage controller configured to manage the storage volumes; and
  - 11          the at least one storage controller further configured to add snapshot criteria to a
  - 12        snapshot set and initiate a plurality of fast replication operations as specified by the
  - 13        snapshot set.
- 14
- 15        24. The system of claim 23, wherein the at least one storage controller is further
- 16        configured to manage snapshot criteria comprising data fields selected from the group
- 17        consisting of a source volume indicator, a target volume indicator, an auto-select target
- 18        indicator, a partial volume indicator, a source extents indicator, a redundancy level
- 19        indicator, and a background copy indicator.

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- 1        25. The system of claim 23, wherein the at least one storage controller is further  
2        configured to:
  - 3            manage a list of controllers associated with the snapshot set;
  - 4            remove specified snapshot criteria from the snapshot set;
  - 5            terminate the plurality of fast replications operations specified by the snapshot set;
- 6        and
- 7            provide information regarding a specified snapshot set.
- 8
- 9        26. A computer readable storage medium comprising computer readable program code  
10      for managing and conducting fast replication operations, the program code configured to:
  - 11            add snapshot criteria to a snapshot set; and
  - 12            initiate a plurality of fast replications operations as specified by the snapshot set.
- 13
- 14        27. The computer readable storage medium of claim 26, wherein the computer readable  
15      program code is further configured for managing snapshot criteria comprising data fields  
16      selected from the group consisting of a source volume indicator, a target volume  
17      indicator, an auto-select target indicator, a partial volume indicator, a source extents  
18      indicator, a redundancy level indicator, and a background copy indicator.
- 19
- 20        28. The computer readable storage medium of claim 26, further comprising computer  
21      readable program code configured to:
  - 22            manage a list of controllers associated with the snapshot set;
  - 23            remove specified snapshot criteria from the snapshot set;
  - 24            terminate the plurality of fast replications operations specified by the snapshot set;
- 25        and
- 26            provide information regarding a specified snapshot set.
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